CLEAN AIR ACT
DRAFT STATEMENT OF CONFORMITY
DELAWARE RIVER MAIN CHANNEL DEEPENING PROJECT
PENNSYLVANIA, NEW JERSEY AND DELAWARE

Introduction

The Delaware River Main Channel Deepening Project (Project) proposes to deepen the main channel from –40 feet to –45 feet mean low water (MLW). The proposed Project extends from the Ports of Camden, New Jersey and Philadelphia, Pennsylvania to the mouth of Delaware Bay, and follows the alignment of the existing federally authorized channel. In addition to the channel deepening, several berths at the various oil refineries and port facilities along the Delaware River will also be deepened. A majority of the oil refinery berths and port terminals are located in the upstream reaches of the river near the Philadelphia/Camden area. The Project is scheduled to be constructed over a period of 5 years for the channel deepening and an additional year for the completion of the adjacent berth deepenings.

The U.S. Army Corps of Engineers (USACE) performed an emissions analysis and mitigation study (*Delaware River Main Channel Deepening Project General Conformity Analysis and Mitigation Report*, February 2004) to determine if the Project would exceed air quality standards and, if so, how to mitigate so that the Project could reach conformity.

Federal Clean Air Act

The U.S. Environmental Protection Agency's (EPA) Office of Air Quality Planning and Standards has set National Ambient Air Quality Standards (NAAQS) for six principal pollutants, called "criteria" pollutants. They are carbon monoxide (CO), ozone [which is composed of nitrogen oxides (NOx) and volatile organic compounds (VOC)], lead (Pb), particulates (PM2.5 and PM10), and sulfur oxides (SOx). The 1990 Federal Clean Air Act Amendments directed EPA to develop two federal conformity rules. Those rules (promulgated as 40 CFR Parts 51 and 93) are designed to ensure that federal actions do not cause or contribute to air quality violations in areas that do not meet the NAAQS. The rules include transportation conformity, which applies to transportation plans, programs, and projects; and general conformity, which applies to all other projects, which would include the proposed Delaware River Main Channel Deepening Project.

Under EPA rules, each state may promulgate its own conformity regulations. State conformity regulations must be consistent with EPA's regulations for state programs (40 CFR 51, Subpart W), but can be more stringent than federal regulations, provided the more stringent requirements apply equally to federal and non-federal entities (40 CFR 51.851(b)). Delaware, Pennsylvania, and New Jersey do not have more stringent regulations than the federal requirements.

Conformity determination is a two-step process: (1) applicability analysis and (2) conformity analysis. Applicability analysis is achieved by comparing the Project's annual emissions to de minimis pollutant thresholds outlined in the conformity rule.

Emission Sources

The emission sources for the Delaware River Main Channel Deepening Project consist of marine and land-based mobile sources that will be utilized during the six-year Project construction period (five years for the Project and one year for the berthing areas). The marine emission sources include the various types of dredges (clamshell, hydraulic, and hopper) as well as all support equipment. The land-based emission sources include both off-road and on-road equipment. The off-road equipment consists of the heavy equipment utilized to construct and maintain the disposal sites. The on-road equipment is made up of employee vehicles and any on-road trucks utilized for the Project. The marine emission sources and off-road equipment consist primarily of diesel-powered engines. The on-road vehicles are a combination of gas and diesel-powered vehicles.

Emission Estimates

Once the operational information for the various engines was obtained from the Project cost estimates, the engine load factors and emission factors were determined using EPA guidelines. The air emissions were determined on an annual basis for each piece of equipment. The emissions were then totaled on an annual basis for all equipment (regardless of where construction was taking place). The annual emissions for the Project were then compared to the de minimis threshold level for the combined non-attainment area. Since the Project area is in severe non-attainment for ozone (composed of NOx and VOC), the de minimis level for each is 25 tons per year. Since the Project area is in a maintenance area for CO, the de minimis level is 100 tons per year.

It was found that the NOx emissions exceed the de minimis threshold limits in every year of the Project. The NOx emissions from the Project varied from 102 tons per year to 849 tons per year. The VOC emissions were under the de minimis limit (25 tons per year) for all years of the Project. The CO emissions exceeded de minimis in Year 4 (106 tons).

The General Conformity ruling (40 CFR 93.158(a)(2)) states that once a Project has exceeded the established de minimis threshold(s), emissions from the Project must be reduced "so that there is no net increase in emissions of that pollutant." Consequently, the Project is required to reduce or offset its annual emissions of CO (Year 4 only) and NOx (all years) to zero.

Emission Reduction Methods

Since it is practicably infeasible to reduce the on-site emissions to zero, a combination of on-site and off-site emission reduction methods were considered. The on-site emission reduction methods consisted of modifying construction methods, increasing construction duration, applying emission reduction technologies, or combinations of all three. Analyses of modifying construction methods determined that their associated cost

increases were unacceptable to the Project. Likewise, increasing the construction duration to achieve conformity was unrealistic due to the magnitude of NOx exceedance. Consequently, the only viable alternative for on-site emission reduction was the application of emission control technologies. The emission control technologies for the on-site alternatives varied, depending on the engine size. For the larger marine engines, the on-site emission control methods were identified as follows:

1) Electrification (EL).

2) Engine replacement (ER).

3) Engine Replacement with Direct-water-injection (ER w/DWI).

4) Selective catalytic reduction (SCR).

For the smaller marine engines and nonroad engines, the on-site emission control methods were identified as follows:

1) Diesel particulate filters (DPF).

2) Engine replacement (ER).

Off-site emission reduction opportunities are not directly involved in construction of the Project; however, all off-site mitigation methods considered take place in the Project non-attainment area where the emissions are generated. Off-site emission reduction opportunities were identified as follows:

1) Engine replacement on the Corps' hopper dredge *McFarland* that performs annual maintenance dredging within the Project air shed.

2) Electrification of existing diesel-powered hydraulic dredges and booster pumps performing annual maintenance dredging within the Project air shed.

3) Engine replacement on various local tugboats currently operating on the Delaware River within the Project air shed.

4) Engine replacement on local ferries currently operating on the Delaware River within the Project air shed.

In order to compare the relative cost-effectiveness of the different opportunities, a cost per ton analysis was performed. Emission reduction and potential cost associated with each of the emission reduction opportunities cited above were determined. The on-site emission reduction methodologies do not mitigate the NOx or CO (Year 4) emissions to levels that satisfy the GC requirements. The off-site emission reduction alternatives however, when combined with the on-site methods, did reduce the NOx and CO (Year 4) emissions so there is no net increase in emissions, per the GC requirements.

Emission Reduction Plan Selection

Three emission reduction plans were developed utilizing various combinations of the emission reduction methods and opportunities described above. All three plans, as presented in the table below, achieve General Conformity for both CO and NOx. Common to all plans was the application of SCR to the major on-site dredging plant (e.g. hydraulic dredges, hopper dredges and booster pumps). For the off-site emission reductions, the plans used various combinations of Operation & Maintenance (O&M) electrification, *McFarland* engine replacement with SCR, ferry engine replacement, and tugboat engine replacement to achieve GC. Details of the plans can be found in the *General Conformity Analysis and Mitigation Report* prepared by Moffatt & Nichol, February 2004.

Emission Reduction Method	Plan #		
	1	2	3
On-Site:			
SCR	X	X	X
Off-Site:			
O&M (EL) – Various Ranges	X	X	X
McFarland (ER w/SCR)	X		
Ferries (ER) – Various Vessels		X	
Tugs (ER) – 2,750-hp			X

All three plans achieve GC for both CO and NOx. Plan #1 was slightly (~2%) cheaper in cost compared to the next highest cost plan (Plan #2). Also, Plan #1 affords the District the greatest control since implementation of both on-site and off-site plan elements involves equipment that is either owned by the Corps or whose services are contracted by the Corps. Plans #2 and #3 rely partially on emission reduction opportunities provided by vessels that are not under the control of the Corps. Plan #1 was selected as the preferred plan for mitigating the Project's air quality impacts.

Prior to initial construction, the USACE will work closely with the regulatory agencies in the implementation of the mitigation plan. As part of this effort, determination will be made if the mitigation goals are achieved. Furthermore, the USACE will continue to coordinate with all appropriate federal, state and local agencies and Metropolitan Planning Organizations (MPO) during the Project construction to ensure that emission reductions are contemporaneous with Project emissions and no net increase in emissions takes place. Progress reports will be issued throughout the process.

Preferred Plan

<u>On-Site SCR</u>

Construction contracts advertised for the Project will require the installation of Selective Catalytic Reduction (SCR) equipment on all hopper dredges, hydraulic dredges and booster pumps used in connection with the Project. Alternatively, the contractor should

be afforded the opportunity to achieve the emission reduction benefits required by the Project through other emission control methods as long as the net result of these methods meets or exceeds the reductions specified in the selected emission reduction plan. The District will ensure that these reductions have been attained by conducting emissions testing to verify emissions reductions.

Off-Site Maintenance Dredging Electrification

The District will pursue converting maintenance dredging activities to electric power at recurring maintenance dredging sites. Details will be developed as part of the plans and specifications for implementing this portion of the plan. Specifications to ensure that these methods are used will be coordinated with appropriate federal, state and local agencies and Metropolitan Planning Organizations and added to the appropriate contracts.

Off-Site Corps' Dredge *McFarland*

The *McFarland* will be utilized as part of the mitigation plan. The vessel will be retrofitted and work a minimum of 87 days (2,076 hours) during Years 3 (2007) through 6 (2010) of construction of the proposed Delaware River Main Channel Deepening Project.

Conclusion

Detailed modeling of the emissions resulting from the Delaware River Main Channel Deepening Project predict that releases of VOCs would be below the de minimis threshold. However, engine pollutant releases during construction of the Delaware River Main Channel Deepening Project would exceed the de minimis levels for NOx (during all years of construction) and CO (Year 4). Mitigation of the NOx and CO emissions will be necessary for the federal action to meet the GC requirements.

The analysis conducted clearly demonstrates that several viable options exist to allow the Project to achieve GC compliance for CO (Year 4) and NOx. The analysis evaluated the effectiveness and related cost impacts of both on-site and off-site emission reduction opportunities. Three emission reduction plans were developed that achieve GC and a preferred plan (Plan #1) selected. More detailed information is available in the *General Conformity Analysis and Mitigation Report* prepared by Moffatt & Nichol, February 2004. Results of this analysis are being coordinated with all appropriate federal, state and local agencies and Metropolitan Planning Organizations (MPO) as well as the public under the General Conformity Rule of the Clean Air Act (40 CFR 93, Subpart B).

The offsets will occur contemporaneously with the Project emissions such that there is no net increase in emissions as required by 40CFR 93.153(b)(2). The Corps commits not to begin construction activities until the emission reduction measures are actually in place. The Corps will release additional notification if the construction plan changes significantly or the mitigation plans need to change and will coordinate with all

appropriate federal, state and local agencies and Metropolitan Planning Organizations to ensure offsets occur contemporaneously with Project emissions.

Based on the conformity analysis performed, I have determined that the Delaware River Main Channel Deepening Project can meet General Conformity provided that the impacts generated as a result of dredging and dredged material management activities are reduced through a combination of measures outlined in this statement before or during construction of the Project.

Furthermore, the off-site mitigation opportunities contained within the preferred plan offer additional environmental benefit beyond that captured by this Project. Since the standard engine life for large marine diesel engines is 20 to 25-years, replacing the engines will provide air quality benefits for at least 14-years beyond the Project construction period. Although these ancillary benefits have not been taken into consideration in the analysis, these far-reaching benefits should not be overlooked.

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Date

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